

GREEN SUPPLY CHAIN MANAGEMENT AND SUSTAINABILITY PERFORMANCE OF MANUFACTURING FIRMS IN SOUTH-EAST NIGERIA

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Abstract

This study examined the relationship between green supply chain management and sustainability performance of manufacturing firms in south-east Nigeria. A descriptive study was adopted to discuss concepts, dimensions and measures. Secondary source of data was used with the review of relevant literature bothering on both variables. The summary of the findings indicates that only a few numbers of manufacturing firms have effectively adopted green supply chain management in their operations. This has led to increased environmental degradation and pollution to seas and landfills. The benefits of green supply chain practices such as green manufacturing and green packaging are lost hence loss in sustainable performance of these manufacturing firms. Based on conclusion from the literature review, green supply chain management enhanced the sustainability performance of manufacturing firms. That manufacturing firms should acquire a cleaner and efficient technology that reduces the amount of emission released into the atmosphere during manufacturing and distribution processes as this would strengthen their green manufacturing practices and improve their sustainability performance. The study has positive impact on the existing knowledge and theory to academia/researchers that may pick interest in this area for further study.

Keywords: Green supply chain management, green manufacturing, green packaging, sustainability performance.

Introduction

Due to the increased degradation and environmental pollution experienced in all parts of the world the problem of how to improve on sustainability performance of firms has attracted much attention. Globally various conferences have been held to deliberate on how to improve on sustainability amid firms. Moreli (2017) affirmed that in Rio de Janeiro, Brazil in 1992 this was the major discussion by the United Nations Conference on Environment and Development (UNCED).

Little et al (2016) opined that climate change, degradation, global warming, pollution and other forms of environmental hazard were addressed in a summit in Johannesburg, South Africa in 2002. Saxena and Khandelwal (2017) described sustainability as a way of meeting human needs for present and future while protecting the environment. It involves incorporation of environmental challenges with varied competing corporate goals. Sustainability has become a major issue of discussion in many conferences in Nigeria due to increased awareness of threat of environmental pollution and degradation affecting human life. Many firms have been accused about this environmental pollution because of large quantity of carbon emission and waste disposal in course of their production and distribution of their products (Langella & Zanoni, 2016)

Conversely, because of the threat to environment pose by firms the emphasis has been shifted from profit maximization to organizational sustainable performance. Sustainability performance can be described as the incorporation of the preservation of the natural environment while meeting the organizational needs and profit maximization (Warhurst, 2016). Green supply chain management ought to be integrated by firms in Nigeria in order to attain environmental sustainability performance. It is integration of environmental

preservation programs into the supply chain management of the organization such as production processes, product design, usage of raw materials and product delivery (Onyinkwa & Ochiri, 2016)

The implementation of green supply chain management is for the interest of both the firm in their financial performance as well as reducing environmental threat (Van Hock, 2017). While Alshura and Awawdeh (2016) observed that the incorporation of the supply management can lead to increased sustainability performance of firms. It is against this backdrop that this study examines the relationship between green supply chain management and sustainability performance of manufacturing organizations in south-east Nigeria.

The major problem is that in attempt to maximize profit most the firms operating south-east Nigeria do not incorporate good environmental policy thereby causing much environmental hazards. Large quantity of carbon monoxide and other hazardous substances are release to the environment which affects human life. Environmental concerns are not considered in choice of raw materials, product distribution, product design, production process and packaging. Other problems are over loading of vehicles that causes more fuel consumption and gas emission and non-adoption reverse logistics which involves not taking back used waste and packaging materials. The community leaders and other environmentalists have called on manufacturing companies to show concern for the environment in the cause of satisfying needs and maximizing profit. Due to these concerns, there are pressure from the communities, environmentalists and government for the manufacturing firms operating in south-east Nigeria to address these issues. Apparently, the manufacturing firms have not fully integrated supply chain management in the improvement of their sustainability performance in the south- east zone of Nigeria. Hence, to all intent and purpose, this study deemed it fit and necessary for the above consideration (green manufacturing and green packaging) to be weighted. Based on this premise, this paper intends to examine the relationship between green supply chain management and sustainability performance within the ambit of manufacturing firms by reviewing literature on both variables in the next section.

In course of carrying out this study, the following objective were stated thus: to examine the relationship between green supply chain management and sustainability performance of manufacturing organizations in the south-south zone of Nigeria. Other specific objectives were also raised, To determine the relationship between green manufacturing and environmental performance of manufacturing organizations in the south-east zone. To ascertain the relationship between green manufacturing and economic performance of manufacturing organizations in the south- east zone. To determine the relationship between green packaging and environmental performance of manufacturing organizations in the south-east zone. To ascertain the relationship between green packaging and economic performance of manufacturing organizations in the south- east zone. In order to adequately address the objectives of this study, the following research questions were raised: To what extent does green manufacturing relate with environmental performance of manufacturing organizations in the south- east zone? To what extent does green manufacturing enhance economic performance of manufacturing organizations in the south- east zone? To what extent does green packaging relate with environmental performance of manufacturing organizations in the south- east zone? To what extent does green packaging enhance economic performance of manufacturing organizations in the south- east zone?

The operational conceptual framework below (fig. 1) has been structure to adequately guide the study. Apparently, this study is logically presented, as the composition of this paper contains in it subsequent sections, theoretical foundations, concept and dimensions of supply chain management, concept and measures of sustainability performance, conclusion and summary of findings from literature review, implications and contribution to knowledge.

Literature Review

Theoretical Framework

Environmental Economic Theory

This theory was originated from Boulding in 1966, posit that natural resources and the eco-system can be destroyed in attempt to achieve economic development. This indicates the negative effects of human economic activities on natural resources and the environment. Theory explains that there is cost implication in course human economic activities. This denotes the increased pollution of the environment, carbon footprint and gas emission caused by conventional distribution system. According to Cheng (2017) the theory stressed the importance of firms maintaining a balance between their economic objectives and preservation of the natural environment. The theory advocates that the practice of green supply chain management such as green manufacturing, and green packaging improves the sustainability performance of manufacturing firms. Hence, the theory is useful in the explanation of the relationship between green supply chain management and sustainability performance of manufacturing organizations.

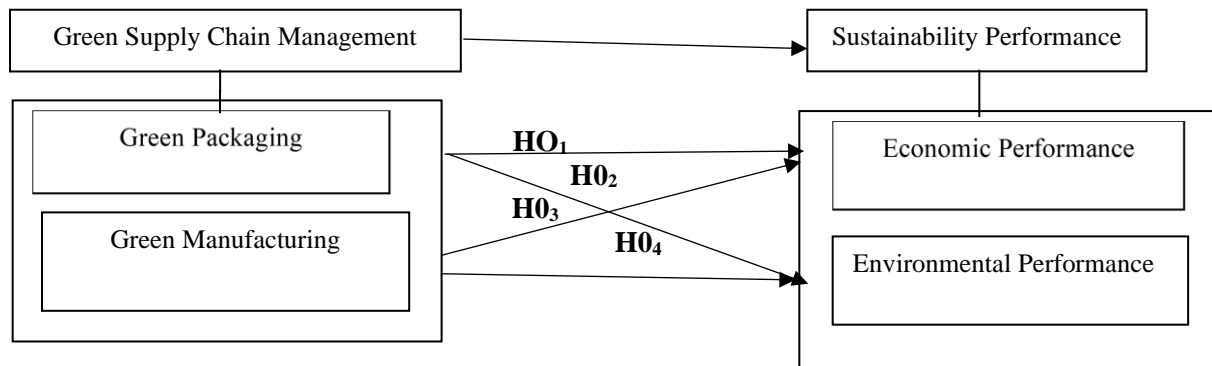


Figure 1. conceptual framework of the relationship between supply chain management and sustainability performance.

Conceptual Review

Concept of Green Supply Chain Management

This can be described as the management of operations as regards storage and movement of raw materials and finished goods, designing and manufacturing of products, packaging and product delivery to final consumers (Mathivathanan et al, 2018). He also stated that green supply chain management practice increases relationship between the organization and the host communities as well as improvement in the organizational image. It leads to environmental protection through green production materials handling, transportation, distribution, warehousing, packing and preserving (Rahim et al, 2016). Saeed et al (2018) opined that in order to achieve environmental and economic goals, incorporation of green packaging, logistics, product design and purchasing is vital.

Green Manufacturing

This is the attempt to reduce the negative impact on the environment in the production processes by removing or reducing waste and pollution. Ninlawan et al (2010) affirmed that it is a production process that reduces hazardous substances, incorporate the Reuse, Recycle and Recovery (3Rs) increases efficiency in the use of energy. Ochieng et al. (2016) stated that it is the use of inputs with minimal environmental impacts that leads to little or no waste or pollution.

Green Packaging

It refers to the use of biodegradable in packaging of finished products or optimizing packaging materials in order to reduce waste products (Transparency Market Research, 2014). Minnette (2018) described it as the packaging system that minimize environmental impact. It is the packaging that is made up recycled or recyclable materials (Goncalves, 2018). The increased awareness of environmental concerns has led to the adoption of green packaging by many firms across the world and old pattern of packaging that are biodegradable which affects the environment negatively are discarded (Leblanc, 2018). Green packaging is encouraged by environmentalists, conservationists and world leaders as a way of reducing wastes disposal into the seas and landfills. According to Goncalves (2018) most firms in the developed countries has adopted green packaging due to its benefits to the environment.

Environmental Performance

Vanalle and Santos (2014) described environmental performance as increasing material efficiency, pollution and wastes reduction status of organizations. This is because manufacturing firms need to reduce or minimize wastes and carbon emissions as well as decrease in hazardous wastes. (Saeed et al, 2018). The environmental disasters of 1970s and 1980s led laws and policies making it mandatory for firms to state their environmental performance status in many countries such as the United States (Kieso et al, 2017). Improved environmental performance involves not only the reduction in pollution and use of hazardous raw materials but helps in reducing cost by the firms by efficient use of materials (Esfahbodi et al, 2017).

Economic Performance

Economic performance refers to the strategies used by firms for efficient utilization of available resources. Economic sustainability focuses on efficient ways businesses maximize their resources in order to remain in business for a long time as well as the maximization of profit (Solow, 2018). It measures the capacity of firms to reduce cost with regards to raw materials, energy use, wastes management, fines for environmental accidents and incidents (Saeed et al., 2018). The essence of economic performance is to identify where resources are not efficiently utilized or poor operational methods and ways to address them before it becomes late. Economic performance is measured in terms of company turnover, profit, quantity of goods sold and cost reduction (Hasna, 2017). Although economic performance of firms is measured in terms of economic sustainability, some international bodies disagree because firms are only interested in profit or efficient use of resources (Linnet et al, 2014)

Green Manufacturing and Sustainability Performance of Manufacturing Firms

As stated in the literature review, there is a relationship between green manufacturing and sustainability performance, as green manufacturing can be used to improve the sustainability performance of manufacturing firms (Alshura & Awawdeh, 2016). He further explains that the overall sustainability performance of manufacturing firms can improve environmental sustainability because green manufacturing is an environmentally friendly method of production. This is supported by Aguilar et al (2018) who opined that green manufacturing practice by firms can improve their sustainability performance through reduction of carbon emission released during the processes of production.

HO₁: There is no positive and significant relationship between green manufacturing and sustainability performance of manufacturing Firms in the south- east zone.

Green Packaging and Sustainability Performance of Manufacturing Firms

Sustainability performance of manufacturing firms can be improved by green packaging. The practice of recycling containers by manufacturing firms reduces industrial waste that are send to the seas and landfills and improves the firm's sustainability performance (Giorgos, 2016). Several manufacturing firms have not improved their sustainability performance as the still practice non-environmental packaging, while they can switch to green packaging to improve their sustainability performance (Lawson, 2017). The use of containers that can be reusable, biodegradable and recyclable is one of the most effective strategies in improving sustainability performance of firms (Ochien et al., 2016)

HO₂: There is no positive and significant relationship between green packaging and Sustainability Performance of Manufacturing Firms in the south- east zone.

The summary of the findings from the literature indicates that only a few numbers of manufacturing firms practice fully green supply chain management. Despite the fact that the federal government imposes fines for pollution and degradation it not strictly implemented by the relevant enforcement agencies.

Conclusion and Recommendations

The literature review indicates that green supply chain management improves sustainability performance of manufacturing firms. There is a relationship between green manufacturing, green packaging and sustainability performance of manufacturing firms. This shown by increased sustainability performance due to improved economic and environmental performance of the concerned firms that uses containers that can be reusable, biodegradable and recyclable. Hence, there is a need for manufacturing firms to practice green supply chain in manufacturing and distribution processes in order to reduce gaseous emission and solid waste to the environment. It is not only for economic gain or maximization of profit but also to preserve the environment and efficient utilization of natural resources.

1. Manufacturing firms in Nigeria should fully practice green supply chain management.
2. Manufacturing firms should practice green manufacturing in order to reduce gaseous emission and other hazardous wastes that are released so as to preserve the environment.
3. They should make sure they acquire a cleaner and efficient technology that will help reduce the quantity of emission during manufacturing and distribution processes in order to strengthen their green manufacturing practices and improve their sustainability performance.
4. Practicing green packaging will help them improve their environmental and economic performance.
5. There should be reduction in the use of excessive packaging materials to enclose their products and they should make that they optimize their packaging for preservation of seas and lands

Implication/Contribution to knowledge

This study will be useful to the manufacturing firms, environmental agencies, environmentalists and academia/researchers. It will highlight dangers of environmental pollution, need for stronger environmental policies and strong enforcement of the policies. The literature as reviewed in this study will impact positively on the existing knowledge and theory to researchers who may be interested in this area for further study.

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